CLAIMS

We claim:

1. A composition of matter comprising a solid support and a self-assembled monolayer of linear peptides wherein said peptides bound directly to said solid support through a terminal amino acid in a predetermined pattern.

2. The composition of matter according to Claim 1 wherein said solid support is a metal.

10 3. The composition of matter according to Claim 2 wherein said metal is selected from the group consisting of gold, copper, nickel, zinc and silver.

4. The composition of matter according to Claim 1 wherein said solid support is selected from the group
15 consisting of silica and glass.

5. The composition of matter according to Claim 1 wherein said solid support has two or more different peptides bonded thereon.

6. The composition of matter according to Claim 1
20 wherein said peptide comprises a terminal reactive group, a central linker and a presenting group.

7. The composition of matter according to Claim 6 wherein the peptides are extended beta strands.

8. The composition of matter according to Claim 6
25 wherein said terminal reactive group is a functional group pendant from a side chain, the amino or the

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carboxy group of the terminal amino acid of the
peptide.

9. The composition of matter according to Claim 8
wherein the terminal reactive group is selected from
the group consisting of a hydroxy, thiol, carboxy,
amino, amido, imide or guanidino group.

10. The composition of matter according to Claim 9
wherein the peptide comprises a terminal amino acid
selected from the group consisting of serine,
cysteine, tyrosine, asparagine, glutamine, aspartic
acid, glutamic acid, lysine, histidine and arginine.

11. The composition of matter according to Claim 10
wherein said terminal amino acid is selected from
serine or cysteine.

12. The composition of matter according to Claim 10
wherein said central linker comprises between about 2
to about 50 amino acids.

13. The composition of matter according to Claim 12
wherein said central linker is selected form the
group consisting of a oligoglycine or oligoalanine.

14. The composition of matter according to Claim 13
wherein said presenting moiety is a peptide that
possesses an affinity to a target molecule.

15. The composition of matter according to Claim 14
wherein the target molecule is a cell surface protein
and the presenting group is selected from the group
consisting of a ligand, an antibody or an antibody

fragment which binds specifically to the cell surface
protein.

16. A composition of matter comprising a solid support
and a self-assembled monolayer of linear peptides
5   wherein said peptides bound directly to said solid
support through a terminal amino acid in a predeter-
mined pattern, the peptide further being
characterized by the formula:

$$X-(CH_2)_n-CH(NH_2)CO(AA)_m-L$$
10   or
$$X-(CH_2)_n-CH(COOH)NH(AA)_m-L$$
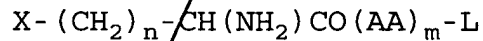
wherein X is H, alkyl, alkoxy, alkylthio or
dialkylamine, thiol, hydroxy, amino or carboxy;
AA is, independently, the same or different,
15   naturally-occurring or non-naturally-occurring amino
acid;
L is a group which binds specifically or non-
specifically to a target;
n is zero or an integer between 1 to about 5; and
20   m is an integer of at least about 2.

17. A self-assembled monolayer of a chemical reactive
moiety on a solid support, the improvement comprising
linking said chemical reactive moiety to said solid
support through one or more peptide linkages.

25 18. A method for manufacturing a composition of matter
comprising a solid support and a self-assembled
monolayer of linear peptides wherein said peptides
bound directly to said solid support through a
terminal amino acid in a predetermined pattern
30   comprising the steps:

(a)   contacting an elastomeric stamp characterized by
      a relief of said predetermined pattern with a
      solution containing a compound which can react
      with said solid support;

5   (b)   contacting said stamp with a surface of said
           solid support under conditions suitable for the
           reaction between said compound and said solid
           surface, wherein said compound reacts with said
           solid support at points of contact between said

10   stamp and said solid support, corresponding to
           the relief of said predetermined pattern;

(c)   removing said stamp; and

(d)   contacting said solid support with a solution
      containing said linear peptides under conditions

15   suitable for the reaction of said peptide and
      said solid support.

19.   A method for manufacturing a composition of matter
      comprising a solid support and a self-assembled
      monolayer of linear peptides wherein said peptides

20   bound directly to said solid support through a
      terminal amino acid in a predetermined pattern
      comprising the steps:

(a)   contacting an elastomeric stamp characterized by
      a relief of said predetermined pattern with a

25   solution containing said linear peptide;

(b)   contacting said stamp with a surface of said
      solid support under conditions suitable for the
      reaction between said linear peptide and said
      solid surface, wherein said linear peptide

30   reacts with said solid support at points of
      contact between said stamp and said solid
      support, corresponding to the predetermined
      pattern; and

(c)   removing said stamp.

20. A method for culturing cells on a composition of
matter comprising a solid support and a self-
assembled monolayer of linear peptides wherein said
peptides bound directly to said solid support through
5   a terminal amino acid in a predetermined pattern
comprising the steps of:
   (a)   contacting said cells with the composition of
matter under conditions suitable for said cells
to bind to the linear peptides; and
10   (b)   maintaining said cells under conditions suitable
for growth.

21. A method for assaying the presence of a target in a
sample comprising the steps of:
   (a)   contacting said sample with a composition of
15 matter comprising a solid support and a self-
assembled monolayer of linear peptides wherein
said peptides bound directly to said solid
support through a terminal amino acid in a
predetermined pattern and said linear peptides
20 possess an affinity for said target; and
   (b)   detecting the presence of said target on said
composition of matter.